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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,884	07/14/2000	Jin-Meng Ho	03493.00087	6582

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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/616,884	HO ET AL.	
	Examiner	Art Unit	
	Chirag G Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETALED ACTION

Specification

1. The abstract of the disclosure is objected to because it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4, 8-19, 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala (US 6,747,968) in view of Van der Tuijn (US 6,411,611), and further in view of Alimi (US 6,741,576).

Regarding claim 1, Seppala discloses in figure 2 and respective portions of the specification of a Wireless Local Area Network (WLAN) comprising of Access Points (AP) containing a point coordinator (PC) and a plurality of Mobile Terminals (MT). The MTs are non-PC entitles. The MTs and AP are configured as a Basic Service Set (BSS).

Access to the channel medium takes into account the quality of service (QoS) requirements of the MTs.

Seppala does not explicitly disclose sending a multipoll frame from the PC station.

However, van der Tuijn discloses a time-slotted access to a wireless medium (col 1 ln 40-45). Time is slotted into twenty-four slots, where each slot is of duration 10 ms. The standard also allows slots of differing lengths including half slots of data and double slots of data. The slotted frame structure is shown in Fig. 2, exemplifies a time division multiple access (TDMA) structure (col 4 ln 44-51). Each slot represents a TO and may be assigned to communication devices to access the entire bandwidth for the duration of the slot time. Thus, the frame structure shown in Fig. 2 can represent a multipoll frame (col 4 ln 52-53).

Van der Tuijn does not explicitly disclose the VSID and AID identifiers.

However, Alimi discloses the assignment of logical channel identifiers and connection identifiers in a communication network comprising of user stations. This configuration may be an IEEE 802.11 local area network. The logical channel can be associated with a unique identifier VPI/VCI (virtual stream identifier VSID) (col 2 ln 65-67). Moreover, the connection identifier can be associated to an IP address, that is the IP address of the destination user station (association identifier AID) (col 2 ln 66-67).

In view of this, having the system of Seppala, and then given the teachings of van der Tuijn and Alimi, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Seppala to incorporate the teachings of van der Tuijn and Alimi.

The motivation to combine is because (1) indicating time slots for user stations on a multipoll frame can explicitly provide slot reservation information to all the user stations, ahead of the CFP transmission cycle, (2) assigning identifiers for virtual channel and virtual connection providing a unique way of identifying each one over multiple choices.

Regarding claim 2, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of the mobile terminals (MTs). The time duration for a TO is determined by the weighting factor for the mobile terminal, and can be up to the maximum length of time allocated for the TO.

Regarding claim 4, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of MTs. Each successive TO starts after a proceeding TO has completed. The preceding TO complete when the time duration associated with its time-slot has completed its duration.

Regarding claim 8, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches that mobile terminals are polled according to the polling list in Fig. 4. Each entry in the polling list represents a transmission opportunity TO for the mobile terminal (MT). Thus, when a MT is polled during its allocated TO time-slot, the MT may transmit at least one data frame.

Regarding claim 9, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 8, and Seppala further teaches transmission of data frames (i.e. Best effort and Real-time data) up-stream from the non-PC mobile terminal MT to the PC-based AP (col 5 ln 28-31).

Regarding claim 10, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 8, and Seppala further teaches transmission of data frames (i.e. Best effort and Real-time data) up-stream from the non-PC mobile terminal MT to the PC-based AP and down-stream from PC-based AP to the non-PC mobile terminal (MT) (col 5 ln 28-31). Side-stream communication, from MT to MT, is implicit in this text whenever the set of MTs is configured in an ad-hoc configuration. This type of configuration allows MTs to

communicate with each other directly, without having to go through the access point AP (see IEEE 802.11 MAC/PHY Std from www.ieee802.org for further reference).

Regarding claim 11, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 8, and Seppala further teaches transmission of QoS-based classes of traffic with two different methods for accessing the wireless medium. The methods are Distributed Coordination Function (DCF) and Point Coordination Function (PCF). The DCF is generally meant for real-time traffic with continuous/periodic flow type such as video and voice. The PCF is generally meant for best effort/asynchronous traffic sources, with discontinous/bursty flow type. An example is TCP/IP data and database queries on the web.

Regarding claim 12, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches that mobile terminals are polled according to the polling list in Fig. 4. Each entry in the polling list represents a transmission opportunity TO for the mobile terminal (MT). Thus, when a MT is polled during it's allocated TO time-slot, the MT may transmit for the entire duration of the time-slot and has access to the entire transmission bandwidth, according to the TDMA protocol. The bandwidth may comprise of many virtual channels, with each channel being represented by a parameter like VSID. Thus, the MT may transmit a data frame in a different channel, represented by a VSID

different from that identified in the multipoll frame. That virtual channel have well have different QoS specification from the of the VSID identified in the multipoll frame. This will necessitate the comparison of QoS parameters between the respective virtual channels.

Regarding claim 13, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches that within a MT (non-PC station) there is a real-time queue (Fig. 3 elmt 44) and best-effort queue (Fig. 3 elmt 46). During the TO, the frame scheduling entity (FSE) of the non-PC MT can make a determination on how to schedule transmission of the real-time and best-effort traffic, and transmit its data frames accordingly.

Regarding claim 14, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches that the wireless network is a wireless local area network (WLAN) (col 2 ln 47-50).

Regarding claim 15, , Seppala discloses in figure 2 and respective portions of the specification of a Wireless Local Area Network (WLAN) comprising of Access Points (AP) containing a point coordinator (PC) and a plurality of Mobile Terminals (MT). The MTs are non-PC entites. The MTs and AP are configured as a Basic Service Set (BSS).

Access to the channel medium takes into account the quality of service (QoS) requirements of the MTs.

Seppala teaches that the PC can decide the polling schedule of non-PC MTs during the Contention Free Period (CFP), to determine if at least up-stream or side-stream traffic may be scheduled for transmission, based on the related QoS information (col 1 ln 59-65 & col 2 ln 57-65).

Seppala further teaches that a superframe contains the CFP and CP (Fig. 1). The PC may poll each MT for one transmission opportunity (TO) once during the CFP (col 2 ln 22-24). One non-PC MT is allocated a TO at least once based on the weighted polling factor, for sending up-stream (MT to AP) or side-stream (MT to MT) traffic.

Seppala teaches an entity analogous to the frame scheduling entity (FSE) (Fig. 3 elmt 30). It is named the **QoS Manager/Traffic Classifier**. The FSE determines at least one TO for at least one MT during the CFP (col 3 ln 19-24 & col 3 ln 23-25).

Seppala does not explicitly disclose sending a multipoll frame from the PC station.

However, van der Tuijn discloses a time-slotted access to a wireless medium (col 1 ln 40-45). Time is slotted into twenty-four slots, where each slot is of duration 10 ms. The standard also allows slots of differing lengths including half slots of data and double slots

of data. The slotted frame structure is shown in Fig. 2, exemplifies a time division multiple access (TDMA) structure (col 4 ln 44-51). Each slot represents a TO and may be assigned to communication devices to access the entire bandwidth for the duration of the slot time. Thus, the frame structure shown in Fig. 2 can represent a multipoll frame (col 4 ln 52-53).

Van der Tuijn does not explicitly disclose the VSID and AID identifiers.

However, Alimi discloses the assignment of logical channel identifiers and connection identifiers in a communication network comprising of user stations. This configuration may be an IEEE 802.11 local area network. The logical channel can be associated with a unique identifier VPI/VCI (virtual stream identifier VSID) (col 2 ln 65-67). Moreover, the connection identifier can be associated to an IP address, that is the IP address of the destination user station (association identifier AID) (col 2 ln 66-67).

In view of this, having the system of Seppala, and then given the teachings of van der Tuijn and Alimi, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Seppala to incorporate the teachings of van der Tuijn and Alimi.

The motivation to combine is because (1) indicating time slots for user stations on a multipoll frame can explicitly provide slot reservation information to all the user stations,

ahead of the CFP transmission cycle, (2) assigning identifiers for virtual channel and virtual connection providing a unique way of identifying each one over multiple choices.

Regarding claim 16, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of the mobile terminals (MTs). The time duration for a TO is determined by the weighting factor for the mobile terminal, and can be up to the maximum length of time allocated for the TO.

Regarding claim 17, the combined method of Seppala, Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15.
However none of these references explicitly disclose a SIFS interframe space.
However, Bims teaches SIFS interframe spacing (col 11 ln 24), which can be after the end of a multipoll frame.

In view of this, having the combined system of Seppala, Tujin and Alimi, and then given the teachings of Bims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Seppala, Tujin and Alimi to incorporate the teachings of Bims.

The motivation to combine is because SIFS are used for the highest priority transmissions enabling MTs with this type of information to access the radio link first.

Regarding claim 18, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15. However, neither Seppala, Van der Tuijn nor Alimi explicitly disclose a SIFS interframe space.

However, Bims teaches SIFS interframe spacing between transmissions of adjacent data frames data frames (col 11 ln 24).

In view of this, having the combined system of Seppala, Van der Tuijn and Alimi, and then given the teachings of Bims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Seppala, van der Tuijn and Alimi to incorporate the teachings of Bims.

The motivation to combine is because SIFS are used for the highest priority transmissions enabling MTs with this type of information to access the radio link first.

Regarding claim 19, the combined method of Seppala, Van der Tujin and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of MTs. It is event from the diagram there can be more than one allocated TO.

Regarding claim 21, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 15 and 21.

Regarding claim 22, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 15 and 21, and Seppala further teaches transmission of data frames (i.e. Best effort and Real-time data) up-stream from the non-PC mobile terminal MT to the PC-based AP (col 5 ln 28-31).

Regarding claim 23, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 15 and 21, and Seppala further teaches transmission of data frames (i.e. Best effort and Real-time data) up-stream from the non-PC mobile terminal MT to the PC-based AP and down-stream from PC-based AP to the non-PC mobile terminal (MT) (col 5 ln 28-31). Side-stream communication, from MT to MT, is implicit in this text whenever the set of MTs is configured in an ad-hoc configuration. This type of configuration allows MTs to communicate with each other directly, without having to go through the access point AP (see IEEE 802.11 MAC/PHY Std from www.ieee802.org for further reference).

Regarding claim 24, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claims 15 and

21, and Seppala further teaches transmission of QoS-based classes of traffic with two different methods for accessing the wireless medium. The methods are Distributed Coordination Function (DCF) and Point Coordination Function (PCF). The DCF is generally meant for real-time traffic with continuous/periodic flow type such as video and voice. The PCF is generally meant for best effort/asynchronous traffic sources, with discontinous/bursty flow type. An example is TCP/IP data and database queries on the web.

Regarding claim 25, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15, and Seppala further teaches that mobile terminals are polled according to the polling list in Fig. 4. Each entry in the polling list represents a transmission opportunity TO for the mobile terminal (MT). Thus, when a MT is polled during its allocated TO time-slot, the MT may transmit for the entire duration of the time-slot and has access to the entire transmission bandwidth, according to the TDMA protocol. The bandwidth may comprise of many virtual channels, with each channel being represented by a parameter like VSID. Thus, the MT may transmit a data frame in a different channel, represented by a VSID different from that identified in the multipoll frame. That virtual channel have well have different QoS specification from the of the VSID identified in the multipoll frame. This will necessitate the comparison of QoS parameters between the respective virtual channels.

Regarding claim 26, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 15, and Seppala further teaches that within a MT (non-PC station) there is a real-time queue (Fig. 3 elmt 44) and best-effort queue (Fig. 3 elmt 46). During the TO, the frame scheduling entity (FSE) of the non-PC MT can make a determination on how to schedule transmission of the real-time and best-effort traffic, and transmit its data frames accordingly.

Regarding claim 27, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches that the wireless network is a wireless local area network (WLAN) (col 2 ln 47-50).

4. Claims 3, 5-7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala, Van der Tuijn and Alimi, and further in view of Bims (US 6,760,318).

Regarding claim 3, the combined method of Seppala, Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1.
However none of these references explicitly disclose a SIFS interframe space.
However, Bims teaches SIFS interframe spacing (col 11 ln 24), which can be after the end of a multipoll frame.

In view of this, having the combined system of Seppala, Tujin and Alimi, and then given the teachings of Bims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Seppala, Tujin and Alimi to incorporate the teachings of Bims.

The motivation to combine is because SIFS are used for the highest priority transmissions enabling MTs with this type of information to access the radio link first.

Regarding claim 4, the combined method of Seppala, Van der Tuijn and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1.
However, neither Seppala, Van der Tuijn nor Alimi explicitly disclose a SIFS interframe space.
However, Bims teaches SIFS interframe spacing between transmissions of adjacent data frames data frames (col 11 ln 24).

In view of this, having the combined system of Seppala, Van der Tuijn and Alimi, and then given the teachings of Bims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Seppala, van der Tuijn and Alimi to incorporate the teachings of Bims.

The motivation to combine is because SIFS are used for the highest priority transmissions enabling MTs with this type of information to access the radio link first.

Regarding claim 5, the combined method of Seppala, Van der Tujin and Alimi discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of MTs. It is evident from the diagram there can be more than one allocated TO.

Regarding claim 6, the combined method of Seppala, Van der Tuijn, Alimi and Bims discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 5, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of mobile terminals (MTs). It is evident from the diagram there can be more than one allocated TO.

Regarding claim 7, the combined method of Seppala, Van der Tuijn, Alimi and Bims discloses all aspects of the claimed invention set forth in the rejection of claims 1, 5 and 6. Seppala further teaches that according to the IEEE 802.11 Std. each pollable mobile terminal (MT) is to be polled at least once during a single CFP (col 6 ln 17-20). Thus, any remaining time can be reallocated to the MTs, so that some of them can be polled multiple times during the CFP, depending on their weighting factors (col 7 ln 5-10).

Regarding claim 20, the combined method of Seppala, Van der Tuijn, Alimi and Bims discloses all aspects of the claimed invention set forth in the rejection of claims 15 and 19, and Seppala further teaches a weighted polling-list (Fig. 4), listing the TO of mobile terminals (MTs). It is evident from the diagram there can be more than one allocated TO.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
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Or faxed to:

(703)305-3988, (for formal communications intended for entry)

Or:

(703)305-3988 (for informal or draft communications, please label "Proposed" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs

October 6, 2004

Ajit Patel
Primary Examiner